

Significance of Basic Design Elements in Spatial and Cultural Environment of Built Forms

Dr. Mukesh Kumar Lalji¹, Dr. Amogh Kumar Gupta², Dr. Sheetal Sharma³

¹Vice-Principal, Department of Technical Education, Employment and Skill Development, M. P. Govt. S. V. Polytechnic College, Bhopal, Madhya Pradesh, India

²Professor and Head of Department, Institute of Architecture, SAGE University Indore & Chairman BOG, SPA, Delhi, India

³Professor and Dean, School of Architecture, Vellore Institute of Technology University, Bhopal, Madhya Pradesh, India

ABSTRACT

Built form in any Organization carries the essence of any design and doing nothing is also a form of design. Elements of Design needs to be carefully studied and applied to creation of any space. Design sometimes suffers from a dilemma about its identity. It is not solely either an art or a science but is a combination of both. Applied design is not like physics or biology or writing or painting, but; it involves these areas and more. Design tends towards a generalized approach, collecting specifics from diverse areas as needed. Design is a combination of art, science, technology and intuition. Design does contain sound proven principals and criteria for judging its success. It is a combination of ideas, methods, deliverables, forms, functions and appearance. These criteria centre on the relationship between human needs and human environmental possible. The measure of the success of a particular applied design is how well it meets the needs of the people experiencing it.

This paper discuss about the elements of design and the techniques used to incorporate them in ideal spatial creation. Balance and Positive combinations of form and functions

KEYWORDS: Light, Colour, Form, Function, Space, Art, Architecture

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1. INTRODUCTION:

The introductory foundation of art and design deals with the elements and principals of design composition. It entails a brief knowledge of Indian religion, traditional and contemporary art and their uses in home. It also gives experience in freehand drawing, scale drawing, knowledge of law of field size and creating designs of art objects. Design is very much a part of our daily lives, it is found in nature as well as in man-made environment. Shapes, forms, colours texture etc. all combine to become a unify whole, which is commonly called "a design" arrangements one becomes aware of shapes, form, colour and texture. When each individual part (element), unifying in its own way, has carefully been placed together with all the other parts, it results in a unifying and beautiful whole (one design). Designing then is the act of arranging things to create a single effect. In designing the "elements" are the things we work with and the principals are what we do with them (elements). Space, line, shape, form, colour, value and texture are the elements with which artist work at create a design. The principal such as- balance, movement, repetition, emphasis, and contrast are 'what' artists do with the design elements to make a pleasing and satisfying "art form"

2. ELEMENTS OF DESIGN

Brief introduction of the Design elements like:

- Space,
- Line,
- Shape,
- Light,
- Texture,
- Form and
- Colour

2.1. SPACE

Space is an element which surrounds us. It is plastic, in that it stretches to infinity, can be compressed into the most minute crevice and, yet exists only as a concept. Space can be experienced two and three dimensionally and it is a vital part of design.

The effect of space varies with its application. An airplane moving across the sky is surrounded by space and a sense of openness & freedom exists. But what about the feeling of space in a crowded elevator? Space is there but the effect is entirely different. Forms have substance and they occupy space. This occupied space is known as Positive Space. Unoccupied or empty space is known as Negative Space. In works of art, the negative area plays a part as important to the whole design as the positive areas.

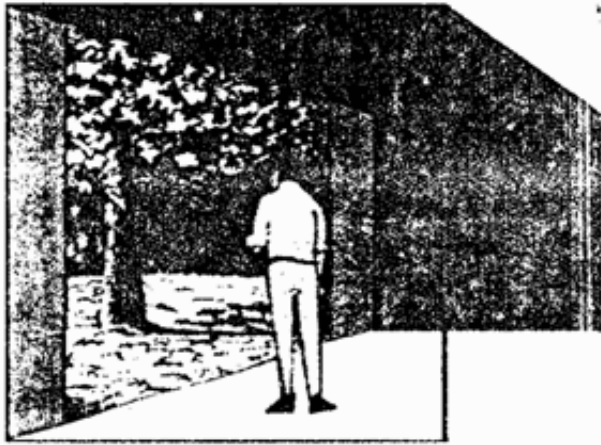


Figure 1 Feeling of Space in room with opening

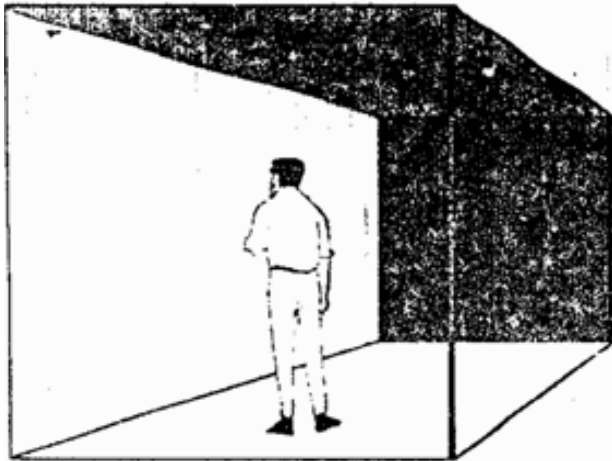


Figure 2 Feeling of Space in room with wall

A flat surface has only two dimensional spaces which mean that, it has length and width but no depth. A canvas, on which an artist works, is flat surface and is called a picture plane. It is not possible to create actual depth or space in this picture plane, but an illusion of space, distance or depth is possible. Depth can be suggested with the use of converging lines. Parallel lines, as they move away into the distance, appear to come closer together, thus creating the illusion of distance and depth.

Colours also have an effect on space. Warm or bright colours appear to be closer to the picture plane, whereas cool or dull colours tend to reach into the distance. When parts or areas of a flat picture plane are physically projected into space, a third dimensional form is created.

2.2. LINE

Line plays an important role in design. A line can simply be a mark or dot or point made by a pen or it can be any continuous mark which causes your eye to follow along its path. In design, line specifically refers to an actual or an implied mark, path, mass or edge, where length is dominant. Eyes readily travel along a line because a line is longer than it is wide.

A line moves, and when it does so, it indicates direction by travelling in a path that leads somewhere – up, down, under, around, through, back, forward, left, right, into, over, diagonally, across etc. Frequently, lines which travel in many different directions at one time create an entirely different illusion than a single directional line. A single directional strength line leads the eye swiftly across the picture plane.

Lines appear in different ways. There are curved lines, straight lines or a variation of the two. They can be long,

short, thick, thin, sharp, light, dark, simple, or complex. Lines can be broken and yet have direction.

They can be textured and coloured. A bold line indicates a feeling of power & confidence. Fine lines project a feeling of sensitivity; timidity; unsurely; distance etc.

2.3. SHAPE

Whenever we use a line to enclose an area, we create a shape. Also a combination of lines, results in shapes. Ways to recognize shapes are through difference in colour, value or texture between a shape and the area around it. A shape or figure is called a positive shape and occupies positive space. The area surrounding a shape is called the background/ foreground as the case may be. It is called a negative shape and occupies negative space.

The shape of the fish is clearly distinct against the background because the line of the edges is sharply defined. Frequently, shapes are not clearly defines with sharp, hard edges, and it is more difficult to see where the shape ends and the background begins. There are all kinds of shapes – solid or opaque, linear, textured, coloured and outlined. Shapes can be transparent, revealing still other shapes behind them. Shapes may be partly covered by other shapes may touch other shapes or stand alone. There are shapes within shapes and shapes around shapes. Similar shapes need not necessarily be identical, yet they can have a common relationship, which visually ties them together.

Contrasting shapes differ from each other; depending on the treatment they have been given. Some shapes will command more attention than others, depending on their size, colour, value, texture, detail or their location. Shapes can promote new feelings and awaken old ones by making one relate to what is known and felt about your own environment for example, tall shapes are elevating. Solid shapes appear to be stable. Long flat shapes express calmness, and directionally downward shapes activate the sense of falling. Shape refers to the edge contour of a plane or the silhouette of a volume. It is the primary means by which we recognize and identify the form of an object. Since it is seen as the line that separates a form from its background, our perception of a form's shape will depend on the degree of visual contrast between the form and its background.

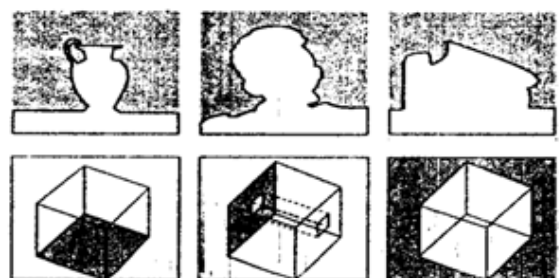


Figure 3 Stable, Unstable Shapes

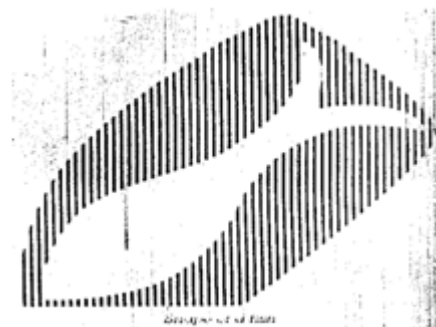


Figure 4 Shape forming to get recognized.

In architecture, we are concerned with the shapes of:

- Planes (floors, walls, ceiling) that enclose space.
- Openings (windows and doors) within a spatial enclosure

2.4. LIGHT

Light has different meaning for different people. To the physicist, it is a form of energy known as electromagnetic energy. To humans, light is a sensation or perception. There are two kinds of light – light from natural sources (primarily the sun) and light from artificial sources (primarily candle, fuel & electrical).

There are three sets of interdependent requirements for adequate lighting. First, there is the functional requirement exacted in interest of securing adequate light for the physical task of seeing. Then, there is the psychological requirement that, lighting contributes its share towards the establishment of the atmosphere of space. Lastly, there is the design requirement for good lighting. IN the fulfillment of this requirement, the light must enhance the visual design of the object directly. All of the above must be synchronized in order to obtain good and adequate lighting.



Figure 5 Light from Artificial Source in a corridor



Figure 6 Light from natural Source



Figure 7 Artificial Light

2.4.1. Effect of light on colour and texture:

Direct and indirect lighting, whether artificial or natural, have definite effect on the total value of the colour e.g. direct light on any colour will look dim or dull in the tonal values.

2.4.2. Reflection of light

To a large extent the colours used in decoration and the lighting schemes must be interrelated since the reflection of light from various surfaces will affect the overall level of illumination in the room. This is of considerable importance in an area such as a kitchen or server and counter where lighting is primarily considered as a functional requirement, but is often of less significance in a restaurant where the lighting is also used as an element of design.

Light reflection from a surface will depend on the hue – colour in the sense of red, green, blue and so on; value – lightness ranging from 0 (black) to 10 (white); and chrome – saturation or intensity expressed from 0 (neutral) to 16 (strongest colour). Under the Munsell system (BS 2660: 1955) each colour is given a designing based on these scales and the percentage reflectance of light from a surface can be determined from the Munsell value using the following formula:

$$\text{Percentage Reflection} = \text{Value} \times (\text{value} - 1)$$

The way in which light is reflected from a surface will also be affected by the concentration and direction of light falling on it and by its nature – i.e. whether a matt or gloss finish.

2.5. TEXTURE

Texture is the quality of a surface, whether it is smooth, rough, dull (malt) or glossy. We are able to observe texture visually, through sight and the sense of touch. The variety of reaction that is activated by touch is unlimited. Consider your own sensual reaction when you touch a feather and compare it to the sensation you feel when you touch a pineapple.

Similarly, a different textures surface, painted with the same colour, creates interest because – tonal variations, due to smooth textures and rough textures surfaces, give brighter and darker tonal values, e.g. Sand-faced plaster and rough cast plaster wall painted with same colour will give different tonal values and different colour shades. Visually, texture can convey (I) richness as in silk against jute, (ii) harshness such as rough cast plaster against smooth plaster or rough

against smooth stone and (iii) fineness such as granite against marble or polished wood. Texture gives character to the design and it creates interest in appearance at the same time breaking the monotony.

2.6. FORM

Form shapes the space in which we live, by establishing its limits.

Form defined as three dimensional shape, mass or structure, is the most inclusive and unchanging element of our usual world. Form is a word of many meanings, one to the accountant, and other to a lawyer, and another to the magician and so on. It is nothing definite but to the architects or interior designers, what you can see as a structure such as a door, which may be rectangular or door with an arch. Is a form. Similarly so many examples can be quoted and it can be seen as if it resembles a number of forms of natural things like flowers, leaves, trees, mountains, clouds, sun, stars etc.

Form can be of any material – steel, concrete, brick, wood, glass, plaster, or combinations of these. There are only three basic forms: Plastic, Skeletal and Planner. Each of these basic forms might be rectilinear or curvilinear. If the form is rectilinear, its planes or solids are flat – like a square box – but if the form is curvilinear, its planes or solids are curved like a round box. Designers refer to certain forms as hard or soft. They are not referring to the material of the form but to their shapes. Hard forms have sharp edges whereas soft forms do not have sharp edges but, may have the curved or chamfered corners.



Figure 8 Plastic, Skeletal and Planner Form.

- Plastic form is not the material but it is a solid structure with minimum small sized punctures.
- Skeletal form is one where in the frame-work is made prominent.
- Planner form is an interlocking of horizontal, vertical or inclined planes of the structure.

In interior designing, where it is combination of art, science, technology & intuition, the design of the furniture or space must be such that, it can be very comfortably activity. One must keep in mind that form must follow function and not vice versa.

This phrase simply means that, the design of an object grows out of its purpose. The utilitarian function of the table forks and spoons is to carry food from the dishes to the mouths; of chairs to provide comfortable support to bodies in sitting position; of chests of drawers to store clothes; of walls and ceilings to provide enclosing protections and of windows to bring light and air into the house. Nearly everything in the house serves a specific useful function and that function is a basic consideration in its design.

2.7. COLOUR

This is one of the most important elements, which bring life, beauty (aesthetics), mood, emotion and character to the design.

Since the beginning of time, colour in the world, at large has made a definite impression upon the human receptive nature. The systematic study of this subject, however, is a comparatively young science. It deals with influence in almost every part of human experience. Right from the colour of the handle of one's toothbrush to the festival of colour named. Holi, which is celebrated with great enthusiasm in India, clearly indicate the utilization of colours in the stimulation of life and growth.

What is colour? It is a sensation which causes stimulation of the eye. The white light, we see as daylight, is made up of all the colours of the rainbow. It is the mixture of light waves of different wavelengths that create a white look.

2.7.1. IMPORTANCE OF COLOUR:

Colours play a vital role in our lives in atmosphere and make it more interesting to live in. What about the effect of colour on our mood? Imagine the colour of a clear, bright blue sky on a cool, crisp day, which quickens our emotional response, and compare it to a dull, overcast grey sky. The first suggests cheerfulness and the latter, a feeling of somberness and sadness.

2.7.2. EFFECT OF COLOUR ON HUMAN MINDS:

Think about the psychology of colour. Red walls seems to move forward: blue walls recede. It does not work for you, do not worry. It's never been proven. The reason? People are different, confronted with a red wall; one person reacts differently from another person with different experiences and sensitivities.

If you are told a colour is fiery red, the colour would seem hot to you. If someone labels a colour cool green, you will probably believe it. It is not so much a case seeing believes as it believes is seeing. A suggestive label leads to believing. A suggestive label leads to believing. But this does not necessarily mean everyone will see it that way. What is important is how you see colours.

Besides emotional, colours have physical effects as well. A cotton judging establishment served a district consisting of several plantations. One year, the crops produced a much lower grade of cotton, the grading being determined by its whiteness, inspite of there being no change in seed, soil or rainfall. Someone finally solved the mystery. The large north windows of the cotton laboratory faced a high wood fence. During the year the fence had been painted red. Red reflected into the laboratory making the cotton appear less white than normal and therefore of poorer quality due to its reddish tint.

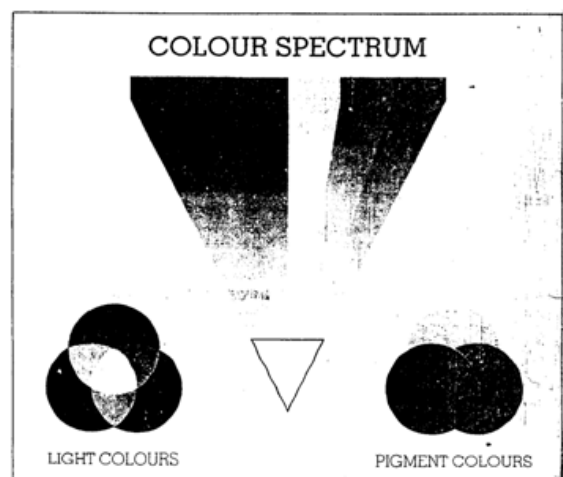


Figure 9 Colour Spectrum - Light and Pigment Colours

2.7.3. Sources of Colour

Colour in a restaurant or lounge may be created by three main techniques:

- Coloured lights illuminating a white or neutral screen, draperies or background;
- Coloured lamp shades over tables and other areas; and
- Colours in the decoration and furniture producing reflection effects.

The first method has limited application but provides the advantage of versatility since the positions of the lamps, the direction of the light, the colours used and the position and shape of the background curtains or draperies can all be modified to create animation and interest and this principle can be applied with fascinating results on water fountains and waterfalls.

Coloured lamp shades are a useful way of producing local colour – for instance a pool of colour around a table, or over an alcove. However, this must be applied with caution and used only in local areas of neutral tones (black, grey and white). The effect of coloured light falling on a surface of another colour is to reflect only the chrome which is common to both. If the colours are in contrast the surface will simply appear black or grey. This effect of lighting on colour is also important when a restaurant changes from the use of natural lighting in the day time to artificial illumination in the evening, particularly where fluorescent lighting is used. Most of the colour and contrast in a room is introduced in the decoration of the walls and ceilings, and in the carpet, curtains and upholstery of chairs. Coloured table cloths and place mats will also provide splashes of local colour by reflection of light.

2.7.4. Colour Combinations

The range of colours which forms the spectrum is composed of three types:

1. Primary colours – red, yellow and blue;
2. Secondary colours – produced by mixing two of the pigments of primary colours in equal proportions (orange = red plus yellow, green = yellow plus blue, purple = blue plus red); and
3. Tertiary colours – formed by mixing a primary and secondary colour, the effect depending on the proportions used (e.g. blue plus green = turquoise).

The intensity of chrome of a colour can be modified by adding black, grey, or white to produce different tones. Shades are colours mixed with black or grey and tints are colours lightened by white (i.e. pastels).

Colours can be represented as a circle to show their relationships and effects:

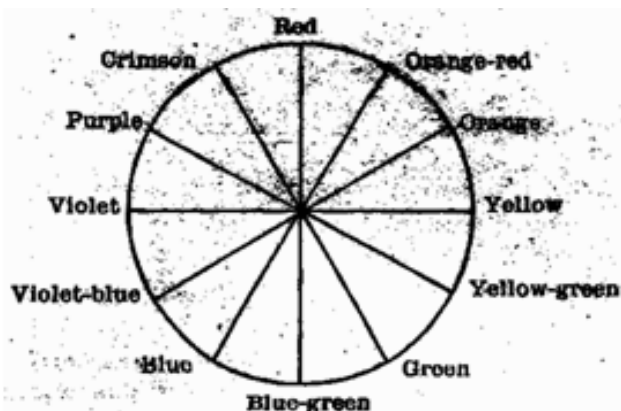


Figure 10 Colour wheel

The colours to the left tend to be dark or heavy while those to the right are light with a high reflective value. Colours on opposite sides of the circle are contrasting or complementary while those adjoining each other are said to be in harmony. A strong pure colour – one with high chrome – tends to dominate over larger areas of tinted pale or neutral colours, and can be used to highlight specific features of design or pattern. Similarly, metallic paints or films such as gilding can be used on prominent features to reflect light and sparkle.

2.8. Effect of Colour

Most colours tend to produce psychological responses mainly because of familiar associations with those colours in other areas and because of the effects of each particular stimulation of the sensory nerves of the eye.

Blues and greens from a natural background role (sky, grass, trees) and tend to be seen as cool, relaxing and soothing colours which make the surface recede. They are less quickly and easily discerned in detail, and should be used in pure or pastel tones rather than grey shades. Dark blue is inclined to be oppressive (night) and should preferably be limited to small areas of detail. Having regard to the weather these colours are of limited application in restaurant design in northern climates and should not be used in rooms with a north aspect.

Oranges, reds and yellows (sunshine, heat, fire) are by contrast warm stimulating gay colours tending also to advance sociable environment. These colours tend also to advance surfaces, making a room appear smaller and more intimate. The reflection of red tints has a flattering effect and tends to emphasize the richness and freshness of meat. Brilliant hues of these colours, however, must be used with caution. Against a background of direct contrast, for example red against green, the prolonged effect may be to produce dazzle and flickering in the eye. The sensitivity of the eye to brilliant colours such as red tires quickly and this visual fatigue tends to distort the appearance of other colours by emphasizing those in direct contrast. In a situation where there is a high turnover of occupancy-such as in snack bars-bright colours may be attractive but in other situations some toning down or the larger areas- by dilution into shades and tints – is often desirable without detracting from the other benefits.

Violet has almost the opposite effect of yellow, tending to produce an unreal sensation of withdrawal and escapism. On the other hand purple is a rich impressive colour (royalty) and is very effectively used in decoration features with gold.

A mixture of intense colours tends to heighten the tension. Neutral shades such as cream and grey blend unnoticeably into the background. This effect is most desirable in a setting of elegance and simplicity where sufficient contrast is achieved by colours and patterns in the furnishing, paintings, flowers, etc, and food. Black and white is employed mainly in the furniture and furnishing to contrast with other colours, and may be used to separate different areas of colour schemes. White tablecloths also emphasize the colour contrasts of food and wine. Special effects may also be introduced to emphasize features and details or to provide focal points of interest and entertainment. Examples include stained glass and coloured mosaics which are often used in lounges and bars to add colour and sparkle, metallic colours or tints to impart sheen, and gilding carefully placed to reflect light.

3. STUDY OF COLOURS

3.1. Classification of Colours:

1. Primary Colours
2. Secondary Colours
3. Intermediately Colours
4. Tertiary Colours
5. Quaternary Colours

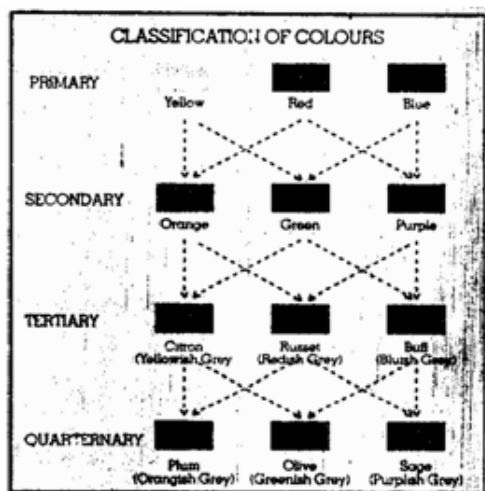


Figure 11 Classification of Colours

3.1.1. PRIMARY COLOURS

Red, Yellow and Blue are called primary colours. The term primary or basic is used because we cannot get them by mixing other colours. They occur in either natural or man-made pigments. By mixing a range of primary colours, we can get many other colours. All colours stem from these primary colours.

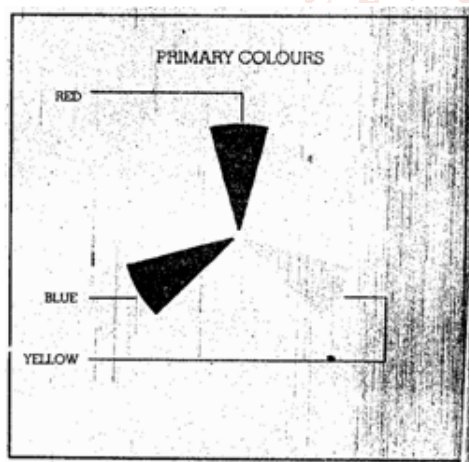


Figure 11 Primary Colours

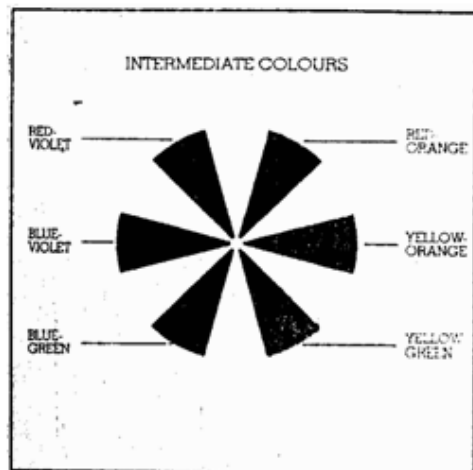


Figure 12 Intermediate Colours

3.1.2. SECONDARY COLOURS

Whenever two primary colours are added in equal proportions a Secondary Colour is obtained.

- 50% Yellow + 50% Red = Orange
- 50% Red + 50% Blue = Violet (Purple)
- 50% Blue + 50% Yellow = Green

3.1.3. INTERMEDIATE COLOURS

When a primary colour and its adjacent secondary colour are mixed in equal proportions, we get an intermediate colour.

1. Yellow + green = yellow green
2. Red + orange = reddish orange
3. Blue + green = bluish green
4. Yellow + orange = yellowish orange
5. Red + violet (purple) = reddish purple (violet)
6. Blue + violet (purple) = bluish purple (violet)

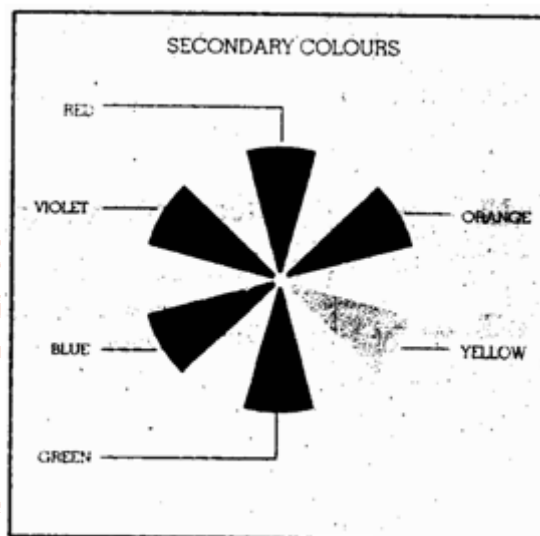


Figure 13 Secondary Colours

3.1.4. TERTIARY COLOURS

When two secondary colours are mixed in equal proportions, they form a neutralized primary colour i.e. Tertiary colours orange + green = neutralized primary Citron yellowish gray.

3.1.5. QUARTERNARY COLOURS

When two tertiary colours are mixed in equal proportions, they form neutralized secondary colour i.e. Quarternary colours.

3.2. DIMENSIONS OF COLOUR

Hue: It is the name of the colour such as yellow red, blue. Hue indicates the colour position in the colour wheel and the spectrum. In also indicates the warmth and coolness of a colour as under. Red is a warm colour, Blue is a cool colour and Green is an intermediate colour.

Value: It only refers to the lightness of darkness of a colour, i.e. amount of light reflected or transmitted by the object. Between the whitest white and the blackest black there are countless degrees of light and dark values. Any hue can vary in value e.g. Red can become light pink of dark maroon.

Intensity: It indicates a color's brightness of dullness. This is determined by the quality of the dominant hue, e.g. Bright royal blue is more intense than powder blue.

There are various ways to change a hue, value, or intensity of a colour. Adding white to red, changes it to a lighter red, known as a Tint. A colour would be darkened by adding black to it, and it could then be called a Shade. An Infinite variety of any colour is possible depending on how much we lighten or darken it. The tone of a colour has nothing to do

with its brightness or somberness; it simply means depth or strength of colour. In a black and white photograph, objects show up according to their tonal value, rather than the brilliance of their colour.

3.3. STANDARD COLOUR HARMONIES

It consists of various colour schemes i.e. Monochromatic, Analogous, Complementary, Split Complementary, Double Split Complementary, Triads, Contrast Colour Scheme, Harmonizing Colour Scheme and Neutrals.

Monochromatic Scheme: This Scheme, simple but attractive, is one in which many tints and shades of a single colour are used.

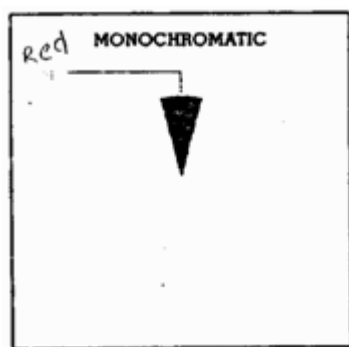


Figure 14 Monochromatic Scheme

Analogous Scheme: This scheme permits the use of colours lying adjacent to each other on the chromatic circle (colour wheel). These colours are not necessarily used in their pure form but mixed together in varying amounts so that numerous shades may be developed from the few colours used. It is usual for one colour to dominate.

Complementary Scheme: For a simple complementary scheme, two colour opposite to each other on the chromatic circle such as blue, violet and yellow, are used in under mentioned varying proportions such as 65-35, 75-25, 80-20. Neither of these need be used in the pure form but hundreds of shades may be obtained by blending them in varying amounts.

Note that, the colour of the smaller area complements the colour of the larger area.

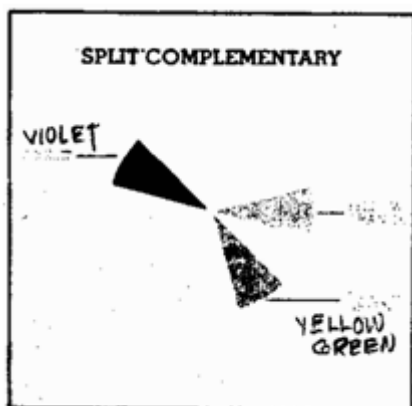


Figure 15 Split Complementary

Split Complementary Scheme: A split complementary takes the form of a 'y' on the colour wheel. The one are of the 'Y' on the colour wheel. The one are of the 'Y' pointing for instance, to yellow orange, the other are to the yellow green and the stem of the 'Y' to violet.

Note that, no primary colour can be split.

Double Split (Near) Complementary: This take the form 'X' on the chromatic circle, for example, the top arms pointing to yellow orange and yellow green and the bottom arms pointing to red violet and blue violet.

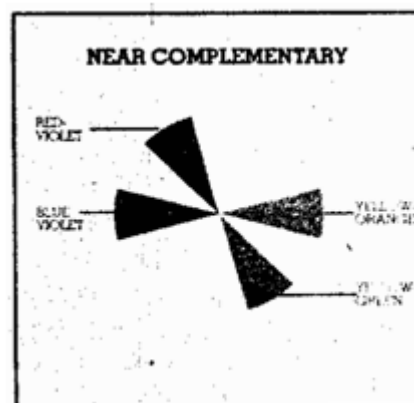


Figure 16 Near Complementary

Triads: Another excellent colour scheme may be obtained by the mixture of triads, i.e. 3 colours located at the third points of the chromatic circle. For instance red, yellow and blue.

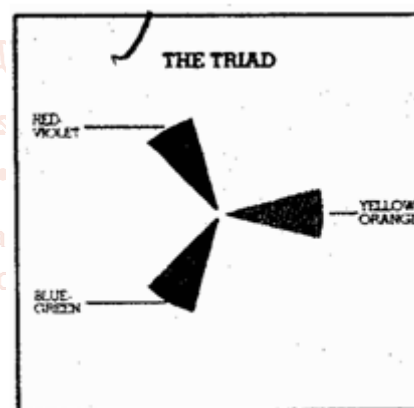


Figure 17 The Triad

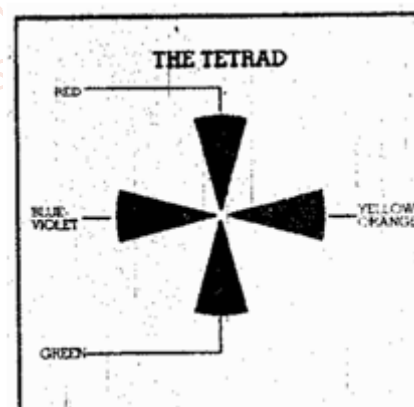


Figure 18 The Tetrad

Contrast Colour Scheme (Tetrad): These are usually based on two different primary colours red and blue for instance, or red and green (which is blue+ yellow). Contrast Colour Scheme can often be extremely effective, especially, if used in the proportion of 50-50, deliberately in a primitive way.

The danger with contrast is that, they can look harsh or crude unless carefully handled. On the whole, they are best used in uneven balance. This can be used to break the harmonizing elements.

Harmonizing Colour Scheme: These are colours based on or linked by the same primary colours. Quite a number of

colours that at first appear to be strongly contrasted, have in fact got some colour link. Pink and orange, for example, have some proportion of red as linking colour, orange being red and yellow. A one colour harmonizing scheme – that is one built up by using different tones and shades of the same colour, is probably easier to handle than any other.

Neutrals: Perhaps the best way of defining a neutral is to call it a background colour—a colour which can be used in large areas without tiring or distracting the eyes and against which, other colours show up vividly and effectively. White is the most commonly used neutral, Black is good when used with white and other neutrals and grey has to be used carefully or it looks depressing, Brown (possibly because it is a mixture of three primary colours) is another very helpful neutral, especially, if quite a lot of grey has been added to it. The advantage of a neutral is that, it does not need to be changed too fast.

Warm, Cool and Neutral Colours: (Refer colour wheel) Greenish yellow, Yellow, Orange yellow, Orange, Organism red, Purplish and are warm colours.

Bluish green, Blue, Bluish purple are cool colours. 50% Yellow and 50% Blue i.e. Green and 50% Red and 50% Blue i.e. Purple are Neutral Colours.

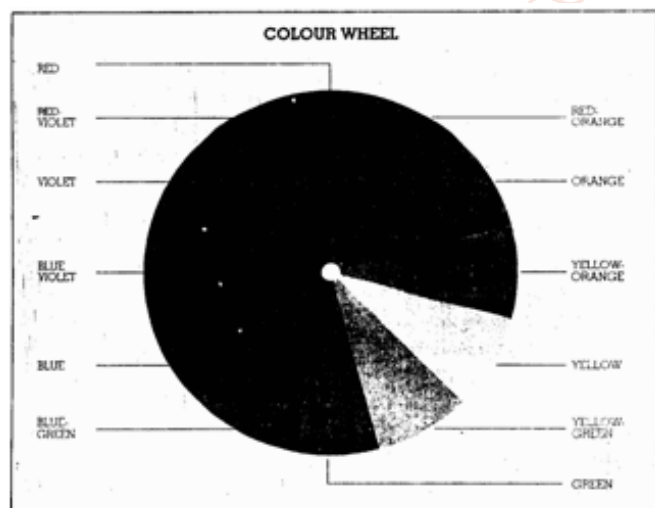


Figure 19 Colour Wheel

4. Conclusion:

Colours behave in most interesting ways. People are always fooled when they select a certain colour from a small colour chip to be applied to a large area. A colour of a certain hue and lightness appears different in interior spaces than in exterior spaces. It is even different in direct light and indirect light. The size matters, a small area will not look the same as a large area of the same colour.

Thus, it is worth-while taking both time and trouble to understand how colours can work for you, because choosing colour scheme can be one of the most enjoyable aspects of house decoration. Through colours you can express your personality and make a home uniquely yours. The way the colours are put together in a room will determine its character and will differentiate it from any other. In an age of standardization and mass production, this is surely to be valued.

Far more design freedom, application of theories, material choices stylistic development, locational fit, Elevation, options and more architectural Explorations. Architecture becomes important for architects own professional growth

all over world, Designing projects most complex profession. Designing purpose of projects need redefinitions, architects own ideas also bound to change because it is critical to be observing the present trends.

Architects will have their Exposure and Experience for designing projects. Hence the variety and diversity vise versa. This is the time to promote Architects collectively promote architecture projects and as well Educational based policies. Thematic approaches including cost conscious construction, culturally appropriate, climatically confirming, creativity, dialoguing, Energy Embodied, harmony with nature, scale of spaces, sequential privacy, connectivity, visual depths, functional flexibility, visual perception, experience of users and life cycle matters.

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